



A Review on Li Zhizao's Scientific Translation and His Contribution to the Chinese Science Development

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Abstract

During the period from the late Ming Dynasty to the early Qing Dynasty, some Chinese scholars began to translate western science and culture. Li Zhizao, an excellent Chinese scientist, not only introduced a lot about western religion to the Chinese people, but also translated a great deal of western scientific knowledge. He committed himself to the introduction of western science and translation of western books, greatly promoting the advance of science in China. This paper first reviews the previous studies on scientific translation during the period from the late Ming Dynasty to the early Qing Dynasty, and the previous studies on Li Zhizao, then holds that: (1) the previous studies mainly focus on the contribution of Li Zhizao as a scholar or translator in general, rather than his specific translation activities and his translation contribution to the Chinese science development; (2) the previous studies are relatively scattered and need to go deeper. Therefore, a systematic and in-depth study of Li Zhizao's translation needs to be made.

Key words: Period from the late Ming Dynasty to the early Qing Dynasty; Li Zhizao; Scientific translation; Contribution

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1. INTRODUCTION

Against the backdrop of “the connection between Chinese knowledge and foreign knowledge” (Liang Qichao, 1936:9), Li Zhizao (1565-1630) was an excellent Chinese scientist, translator and outstanding representative of cultural exchanges between China and the West in the period from the late Ming Dynasty to the early Qing Dynasty. Li Zhizao once studied science from Matteo Ricci, a well-known missionary. In the process of learning western science and culture from Matteo Ricci, he accepted the gospel and was baptized. In 1603, Li Zhizao incorporated astronomy into the imperial examination, which is the first move in China. Li was good at geometry, astronomy, arithmetic and geography and devoted all his life to translating and compiling a large number of western scientific books and made great contributions to the society at that time. Li was one of the main figures actively promoting the introduction to western learning. Therefore, he was called one of the “three pillars” of Chinese Catholicism.

2. PREVIOUS STUDIES ON SCIENTIFIC TRANSLATION IN THE LATE MING DYNASTY AND THE EARLY QING DYNASTY

The previous studies on scientific translation during the period from the late Ming Dynasty to the early Qing Dynasty mainly focus on such aspects as the studies on the factors influencing the scientific translation, the studies on the features and influence of scientific translation.

2.1 The Studies on the Factors Influencing the Scientific Translation

The studies on the factors influencing the scientific translation in the late Ming Dynasty and the early Qing Dynasty are as follows. Li Jingfeng (2015) makes a study

on the background of the formation of scientific thought in the late Ming Dynasty from a macro perspective. He points out that the peak of western learning in the late Ming Dynasty was formed by the intricate combination of internal and external factors. First of all, the development of western capitalism and the opening of New Sea-route enable the introduction of western science and technology into China. At the same time, Catholicism, the newborn religion in the Reformation, took up the mission of preaching, which also creates an opportunity for the introduction of Western science and technology into China. Secondly, in the late Ming Dynasty, the Chinese government implemented a policy of closing the door to the outside world so that foreign maritime merchants were not allowed to access to the market. However, not all of them were banned, and missionaries had the opportunity to come to China. In addition, at the end of Ming Dynasty, a group of enlightened scholars realized that the prevailing Neo-Confucian theory of mind could not help the society situation, and turned to seek knowledge with practical application. At this time, the western advanced science and technology brought by missionaries became the prime choice, thus forming a trend of practical learning.

Pan Yan, Jiang Yunmei and He Sanning (2013) described that the rise of scientific translation in the late Ming Dynasty was due to the efforts of missionaries. With the arrival in China, the missionaries took the initiative to give presents and teach the local residents mathematics, so as to become less exclusive. In order to eliminate the differences in life between the East and the West, western missionaries actively catered to the social customs of China at that time and began to have long hair and wear Confucian costumes, which promoted the establishment of Jesuit settlement. Not only that, the Chinese upper class also pushed scientific translation forward. The attitude of the ruler determines whether western science can appear in feudal China. If the authorities had not recognized western scientific knowledge, the spreading of scientific translation in the late Ming Dynasty would have been on the rocks.

Wang Jihui (2013) conducts a detailed study on the special historical conditions for Chinese scientific translation in the late Ming and early Qing Dynasties and holds that the conditions were not very ripe. On the one hand, China's environment wasn't a lot of call for western learning at that time, so the whole society discriminated against the culture and knowledge from the west. On the other hand, the government's foreign policy in the late Ming Dynasty tended to be conservative, and the Chinese side saw more unstable and negative factors from foreign culture and knowledge. Therefore, science was not valued, to say nothing of scientific translation. However, the second peak of translation in China was finally successfully conducted and completed, which largely depends on the dedication of selfless translator to the

translation. Another reason is that missionaries adopted the strategy of adaptation in their translation activities (that is, considering the Chinese people's respect for the dead, they deleted the visceral part of anatomy and translated only the part of sensory organ anatomy when translating medical works), so as to ensure that western scientific knowledge could be accepted by the Chinese more easily.

Wang Yougui (2006) makes a research on the sponsorship of scientific translation in the late Ming and early Qing Dynasties, pointing out that the sponsorship could be divided into three parts: the first was the scholar officials at that time, including the translators cooperating with missionaries and the publishers who did not participate in the translation but funded the translation activities; the second was the imperial institutions in the late Ming Dynasty and the early Qing Dynasty; the third was the European power institutions like the Church and royal family.

2.2 The Studies on the Features of Scientific Translation

Zhang Qiang, Zhang Ling and Zhang Yingyan (2015) make a detailed analysis of the features of scientific translation represented by the missionaries in the late Ming Dynasty. The first feature of missionaries' translation activities is the "purposiveness". After coming to China, the missionaries began to observe and analyze the Chinese society, and put forward the strategy of "preaching with scientific knowledge", that is improving the status of Catholicism in China with the help of scientific knowledge. Secondly, as the central figures of translation, missionaries were of extremely prominent subjectivity, which shows the feature of manipulation in translation. The Chinese government and scholars did not have the access and opportunity to select which books for translation. In terms of translation materials selection and knowledge introduction, missionaries would integrate religious ideas to achieve their own translation purposes. The third feature is the adaptability of missionaries to the Chinese culture. The missionaries realized the importance of gaining the recognition of the Chinese emperor, officials and the people at that time, so they respected Chinese customs and won favor, so as to enhance people's trust and enhance religious preaching.

Wang Jiadi (2014) analyzes the features of missionaries' translation activities in China from the perspectives of translation content, translation form and translation strategies. In terms of translation content, translation activities during the period from the late Ming Dynasty to the early Qing Dynasties covered a broad range, such as religion, astronomy, mathematics and military technology. As for translation forms, various patterns were adopted, including independent translation, cooperative translation, and writing translation. On the issue of translation strategy, "cultural hybridity" is the main strategy of missionary translation. Missionaries

tended to seek the words familiar to Chinese to express the new western knowledge, so as to adapt to the expression convention of the Chinese people. However, when it comes to logical thinking and reasoning, they still used exotic words.

Li shucang (2012) probes into the fact that scientific translation activities in the late Ming Dynasty were purposeful, unsystematic, bidirectional and limited. As for the purpose of translation, western missionaries aimed to conquer China by religious preaching, while the purpose of Chinese scholars was to make China prosperous and strong so that the Chinese people can enjoy better life. Secondly, in terms of translation contents, translation organizations, translators and translation theories, the scientific translation in the late Ming Dynasty and early Qing Dynasty were quite arbitrary and unsystematic. With regard to the feature of bidirectional, while western science and culture were introduced into China, Chinese traditional culture was also spread to the west through missionaries, promoting cultural exchanges between China and the West. The limitations of the times are manifested in two aspects: one is the single translation mode; the other is only working with the upper class.

2.3 The Studies on the Influence of Scientific Translation

Wang Zerong and Fan Jun (2015) conduct a research on the influence of science translation in the late Ming Dynasty on China's industrial civilization. First of all, Wang and Fan figure out that during the period from the late Ming Dynasty to the early Qing Dynasty, western missionaries and Chinese scholars cooperated to translate western scientific works, introduced advanced technology into China and promoted the progress of science and technology and the development of industry in China. Moreover, the introduction of the western pragmatic thought in the late Ming Dynasty made the Chinese society gradually abandon the ancient academic thought of Zhu Neo Confucianism, which had a great impact on the trend of empty talk at that time, injected vitality into the academic world, satisfied people's spiritual need, and played a connecting role in the process of industrial civilization in China.

Chen Meng (2011) also explores scientific translation in the late Ming and early Qing Dynasties, and holds that western science brought by missionaries in the late Ming Dynasty and the early Qing Dynasty had a lot of positive effects on China. The large-scale translation activities not only promoted the scientific development in China, but also shook the foundation of the traditional educational contents, methods and ideas, and promoted the reform of educational thoughts. Secondly, the introduction of new knowledge influenced the traditional knowledge structure of scholars and broadened the vision of the Chinese people in the field of natural science and humanities. Moreover, missionaries input rich Chinese professional

vocabulary through translation activities, reinvigorating the development of the Chinese language.

3. PREVIOUS STUDIES ON LI ZHIZAO

According to the books and articles available, the previous studies on Li Zhizao can be roughly divided into two types: general studies on Li Zhizao and studies on specific aspects of Li Zhizao.

3.1 General Studies on Li Zhizao

Among the previous studies on Li Zhizao, *Studies on Li Zhizao* compiled by Chinese historian Fang Hao (1966) is of great significance. Fang makes a comprehensive study on Li Zhizao's personal life, which can be mainly divided into four parts: Li's association with Western missionaries and his research and contribution to the Catholic Church; Li's poetry, essays and carving works; Li's translation and compilation works, involving mathematics, cosmology, science and other disciplines; Li's contribution to the society at that time, mainly including repairing the Ming calendar. Fang Hao collects and sorts out a large number of Chinese and western materials and records about Li Zhizao, providing a lot of valuable information for future research.

Song Qiaoyan (2002) summarizes Li Zhizao's life story, analyzes the origin of Li Zhizao and western translation and collates the Western books translated by Li Zhizao, which were involved in astronomy, geography, mathematics, calendar, religion, philosophy and other fields. In addition to his own translation, Li Zhizao was also an active advocate and organizer of western translation activities in the late Ming Dynasty. He provided a lot of support and help for western translation by writing prefaces and postscripts and printing translated works. Li Zhizao played an important role in the spreading of Western learning to the East during the period from the late Ming Dynasty to the early Qing Dynasty.

Wang Lijun (1994) briefly discusses Li Zhizao's academic views, and describes that Li Zhizao's academic attitude, academic methods and academic mode contain the characteristics of modern scientific thought, such as studying hard to seek truth, attaching much weight to exchanging and sharing ideas with teachers and friends, accepting western science rationally and giving consideration to practical application. Li Zhizao's academic activities, including translating, writing and printing Western books and maps, can't be separated from the guidance of the above academic views.

3.2 Specific Studies on Li Zhizao

In addition to the general studies, there are also some specific studies on Li Zhizao, which can be divided into two aspects: one is the study of Li Zhizao and translation; the other is the study of Li Zhizao and Western learning.

3.2.1 Studies on Li Zhizao and Translation

The studies on Li Zhizao and translation mainly include Li Zhizao's translation view, Li Zhizao's translation practice and Li Zhizao's translation contribution.

Li Nanqiu (1983), a Chinese translation history researcher, makes a research on the quantity and quality of translation of scientific works and the introduction of western scientific knowledge. Then Li Nanqiu concludes that Li Zhizao occupied a certain position in the history of scientific translation in China. He sorts out some of Li Zhizao's translations and points out that these translations made Chinese learn a lot of western scientific knowledge. In addition to the quantity, the quality of Li Zhizao's translation is also well received. Besides, Li Nanqiu sums up Li Zhizao's contributions from the perspective of scientific translation: he was the first to introduce the knowledge of astronomy, written calculation and formal logic to the Chinese; he printed western science series to help the Chinese learn western scientific knowledge; he introduced the role of scientific books such as astronomy and calendar to the upper class in detail, and asked the rulers to build libraries; he translated a large number of useful books and introduced western learning.

Ji Yanlong and Fang Zhen (2019) emphasize Li Zhizao's outstanding contribution to the cultural and technological exchanges between China and the west, and list that the influence of Li Zhizao's scientific translation as follows. Firstly, Li corrected people's limited understanding of the geographical scope of the world, so that broadening the vision of the people in the late Ming Dynasty. Secondly, he triggered a new trend of learning science, pouring major energy into the development of science and technology in China. Moreover, Li translated many scientific terms into Chinese, facilitating the spread of western scientific knowledge in China. In addition to translation practice, Li Zhizao's serious attitude towards the translation of Western works has set a good example for later translators.

Yang Quanhong (2016) sorts out Li Zhizao translation ideas from his translation works, mainly including translation purposes, translation methods and principles, translation difficulties, etc. Li Zhizao had multiple purposes of translation, such as promoting the Chinese culture and education, and demonstrating the calendar and the boundless heaven. As for translation principles, Li advocated that translation should base on the original book, rather than adding comments to lose the faithfulness of the translation. In addition, he held that difficulties in language and professional knowledge would inevitably appear in translation activities. In the face of these difficulties, translator can put it on hold.

3.2.2 Li Zhizao and Western Learning

Wang Li (2010) sums up the course of Li Zhizao's western learning as four stages: introducing western scientific knowledge, exploring science with the help of

mathematics, deducing the objective law things through logic and attaching great importance to both theory and practice. Through the description of these four stages, she makes a detailed analysis of the unique features of Li Zhizao's western learning thought, and believes that the subjective reason of Li Zhizao's western learning lies in the entrenched Confucian crisis thought. Concerning Li Zhizao's interest in science learning, academic views and missionary guidance played an important role. In addition, the development of Li Zhizao's western thoughts is of great significance to our modern society's understanding and development of the relationship between science and philosophy, and to the cultural exchanges between China and the West.

Jia Qingjun (2010) conducts a research on Li Zhizao's views and understanding of Western learning. He analyzes that on the basis of the trend of practical learning in the late Ming Dynasty, Li understood and accepted Western learning in the framework of practical learning. However, the framework of practical learning restricted his objective view of Western learning and hindered his absorption of Western knowledge and the development of Confucianism. Therefore, the introduction of Western learning during the period from the late Ming Dynasty to the early Qing Dynasty did not establish an independent natural science system in China, nor did it bring revolutionary influence to China.

CONCLUSION

To sum up, the previous studies on Li Zhizao tend to demonstrate his personal life or disciplinary analyses, many of which summarize his translation ideas based on Li Zhizao's remarks, or study Li Zhizao's translation of Western books and thus conduct the general research Li Zhizao as a scholar or translator. Obviously, the research perspective is relatively single, the studies are scattered, and need to go deeper. Therefore, a systematic and in-depth study on Li Zhizao's scientific translation activities and translation practice, Li Zhizao's scientific translation's contribution to China's scientific development, Li Zhizao's translation thought and its influence need to be followed up.

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